

CLAIMS

What is claimed is:

1. A personal communications network unit for use in a spread spectrum code division multiple access (CDMA) communication system which co exists with a diverse communications system, the diverse communications system selectively utilizing various frequencies within a selected range of frequencies, the unit comprising:

means for generating a spread spectrum CDMA data signal using a pseudo random chip code sequences the spread data signal encompassing the selected range;

means for notch filtering the spread data signal at frequencies within the selected range used by the diverse communications system; and

means for transmitting the notch filtered spread data signal to a base station.

2. The unit of claim 1 further comprising means for determining frequencies currently used by the diverse communications system that have a spectrum overlapping a spectrum of the spread data signal; wherein the notch filtering is at the determined frequencies.

3. The unit of claim 2 further comprising means for detecting received signal power associated with the overlapping frequencies; wherein the determining of the overlapping frequencies is based on in part the detected received power.

4. The unit of claim 2 wherein each of the overlapping frequencies has an associated bandwidth, the unit further comprising:

means for determining the bandwidth for each of the overlapping frequencies; wherein the notch filtering filters a bandwidth at each of the overlapping frequencies based on in part that frequency's determined bandwidth.

5. The unit of claim wherein the unit further comprises:

means for receiving a command indicating the overlapping frequencies transmitted from the base station; wherein the determining of the overlapping frequencies is based on in part the received command.

6. The unit of claim 1 further comprising:

means for receiving a base spread spectrum CDMA data signal and recovering data from the base data signal; wherein the base data signal being notched filtered at the frequencies within the selected range.

7. The unit of claim 6 further comprising:

means for notch filtering the received base data signal at the frequencies within the selected range prior to the recovering of data.

8. The unit of claim 7 further comprising means for determining frequencies currently used by the diverse communications system that have a spectrum overlapping a spectrum of the spread data signal and received base CDMA data signal; wherein the notch filtering of the spread data signal is at the overlapping frequencies and the notch filtering of the received base data signal is at the overlapping frequencies.

9. The unit of claim 8 further comprising means for detecting a received signal power associated with the overlapping frequencies wherein the determining of the overlapping frequencies is based on in part the detected received signal power.

10. The unit of claim 8 wherein each of the overlapping frequencies has an associated bandwidth, the unit further comprising:

means for determining the bandwidth for each of the overlapping frequencies; wherein the notch filtering of the spread data signal and the base data signal filters a

bandwidth of each of the overlapping frequencies based on in part that frequency's determined bandwidth.

11. The unit of claim 8 wherein the unit further comprises:

means for receiving a command indicating the overlapping frequencies transmitted from the base station; wherein the determining of the overlapping frequencies is based on in part the received command.

12. A personal communications network unit for use in a spread spectrum code division multiple access (CDMA) communication system which co exists with a diverse communications system, the frequencies within a selected range of frequencies, the unit comprising:

a mixer for mixing a data signal with a pseudo random chip code sequence to generate a spread spectrum CDMA data signal, the spread data signal encompassing the selected range of frequencies;

an adaptive notch filter for notch filtering the spread data signal at frequencies within the selected range used by the diverse communications system; and

an antenna for transmitting to a base station the notch filtered spread data signal.

13. The unit of claim 12 further comprising a sensor detecting a received signal power associated with the frequencies that have a spectrum overlapping a spectrum of the spread data signal, the detected received signal power used to determine the overlapping frequencies; wherein the adaptive notch filtering is at the determined frequencies.

14. The unit of claim 12 wherein the antenna receives a command transmitted from the base station indicating the overlapping frequencies and the adaptive notch filtering is at the indicated overlapping frequencies.

15. The unit of claim 12 further comprising a controller operatively coupled to the adjustable notch filter for controlling the adjustable notch filter to filter at the frequencies used by the diverse communications system.

16. The unit of claim 12 further comprising a local oscillator for modulating the notch filtered spread data signal to radio frequency.

17. The unit of claim 12 wherein the antenna receives a base station spread spectrum CDMA data signal; wherein the base data signal being notch filtered at the frequencies within the selected range.

18. The unit of claim 17 further comprising:
a despreader for despreading the base data signal;
a bandpass filter for filtering the despread base data signal; and
a detector for detecting data within the despread base filtered data signal.

19. A personal communications network unit for use in a spread spectrum code division multiple access (CDMA) communication system which co exists with a diverse communications system, the diverse communications system selectively utilizing various frequencies within a selected range of frequencies, the unit comprising:

a modulator for converting a data signal into a format suitable for communicating over radio waves;

a spread spectrum modulator for spreading the converted data signal using a pseudo random code sequence; and

a transmitter for transmitting the spread data signal over a spectrum encompassing the selected range of frequencies; whereby at a base station data is recovered from the transmitted spread data signal by notch filtering at the frequencies within the selected range.

20. A base station for use in a spread spectrum code division multiple access (CDMA) communication system which co exists with a diverse communications system, the diverse communications system selectively utilizing various frequencies within a selected range of frequencies, the base station comprising:

means for generating a plurality of spread spectrum CDMA data signals using pseudo random chip code sequences, the spread data signals encompassing the selected range;

means for notch filtering the spread data signals at frequencies within the selected range used by the diverse communications system; and

means for transmitting the notch filtered spread data signals to personal communication network units.

21. The base station of claim 20 further comprising means for determining frequencies currently used by the diverse communications system that have a spectrum overlapping a spectrum of the spread data signal; wherein the notch filtering is at the determined frequencies.

22. The base station of claim 21 further comprising means for detecting a received signal power associated with the overlapping frequencies; wherein the determining of the overlapping frequencies is based on in part the detected received signal power.

23. The base station of claim 21 wherein each of the overlapping frequencies has an associated bandwidth, the unit further comprising:

means for determining the bandwidth for each of the overlapping frequencies; wherein the notch filtering filters a bandwidth at each of the overlapping frequencies based on in part that frequency's determined bandwidth.

24. The base station of claim 20 further comprising:

means for receiving a plurality of unit spread spectrum CDMA data signals and recovering data from the unit data signals; wherein the unit data signals being notch filtered at the frequencies within the selected range.

25. The base station of claim 24 further comprising:

means for notch filtering the received unit data signals at the frequencies within the selected range prior to the recovering of data.

26. The base station of claim 25 further comprising means for determining frequencies currently used by the diverse communications system that have a spectrum overlapping a spectrum of the spread data signals and received unit CDMA data signals; wherein the notch filtering of the spread data signals is at the overlapping frequencies and the notch filtering of the received unit data signals is at the overlapping frequencies.

27. The base station of claim 26 further comprising means for detecting a received signal power associated with the overlapping frequencies wherein the determining of the overlapping frequencies is based on in part the detected received signal power.

28. The base station of claim 26 wherein each of the overlapping frequencies has an associated bandwidth, the unit further comprising:

means for determining the bandwidth for each of the overlapping frequencies; wherein the notch filtering of the spread data signal and the base data signal filters a bandwidth of each of the overlapping frequencies based on in part that frequency's determined bandwidth.

29. A base station for use in a spread spectrum code division multiple access (CDMA) communication system which co exists with a diverse communications system, the frequencies within a selected range of frequencies, the base station comprising:

a plurality of mixers for mixing data signals with pseudo random chip code sequences to generate a plurality of spread spectrum CDMA data signals, the spread data signals encompassing the selected range of frequencies;

a plurality of adaptive notch filters for notch filtering the spread data signals at frequencies within the selected range used by the diverse communications system; and

an antenna for transmitting to personal communication network units the combined signal.

30. The base station of claim 29 further comprising a sensor detecting a received signal power associated with the frequencies that have a spectrum overlapping a spectrum of the spread data signal, the detected received signal power used to determine the overlapping frequencies; wherein the adaptive notch filtering is at the determined frequencies.

31. The base station of claim 29 further comprising a controller operatively coupled to the adjustable notch filters for controlling the adjustable notch filters to filter at the frequencies used by the diverse communications system.

32. The base station of claim 29 further comprising a plurality of local oscillators for modulating the notch filtered spread data signals to radio frequency.

33. The base station of claim 29 wherein the antenna receives a plurality of unit spread spectrum CDMA data signals; wherein the unit data signals being notch filtered at the frequencies within the selected range.

34. The base station of claim 33 further comprising:

a plurality of despreaders for despreding the unit data signals;
a plurality of bandpass filters for filtering the despread unit data signals; and
a plurality of detectors for detecting data within the despread unit filtered data signals.

35. The base station of claim 29 further comprising a sensor detecting a received signal power associated with the frequencies that have a spectrum overlapping a spectrum of the spread data signal, the detected received signal power used to determine the overlapping frequencies; wherein the adaptive notch filtering results in the spread RF data signals being filtered at the determined frequencies.

36. The base station of claim 29 further comprising a controller operatively coupled to the adjustable notch filters for controlling the adjustable notch filters.

37. The base station of claim 29 wherein the antenna receives a plurality of unit spread spectrum CDMA data signals; wherein the unit data signals being notch filtered at the frequencies within the selected range.

38. A base station for use in a spread spectrum code division multiple access (CDMA) communication system which co exists with a diverse communications system, the frequencies within a selected range of frequencies, the base station comprising:

a first plurality of mixers for mixing data signals with pseudo random chip code sequences to generate a plurality of spread spectrum CDMA data signals;

a second plurality of mixers for mixing the spread data signals with an intermediate frequency (IF) signal as a plurality of IF spread data signals;

a plurality of adaptive notch filters for notch filtering the IF data signals;

a third plurality of mixers for mixing the filtered IF data signals with a radio frequency (RF) signal as spread RF data signals; wherein the spread RF data signals are effectively notch filtered at frequencies within the selected ranges; and

an antenna for transmitting to personal communication network units the spread RF data signals.

39. The base station of claim 38 further comprising a combiner for combining the spread RF data signals prior to transmission.

40. A spread spectrum base station comprising:

means for generating a plurality of spread spectrum signals, the spread spectrum signals encompassing a selected frequency spectrum;

means for detecting frequencies within the selected frequency spectrum by a diverse signal associated with the detected frequencies;

means for notch filtering the spread spectrum signals so that a transmitted version of the spread spectrum signals is notch filtered at the detected frequencies; and

means for transmitting the notch filtered spread spectrum signals.

41. The base station of claim 40 wherein the notch filtering is performed at intermediate frequency.

42. The base station of claim 40 wherein the notch filtering is performed at radio frequency.

43. A spread spectrum base station comprising:

a plurality of mixers for mixing data signals with codes to generate a plurality of spread spectrum signals;

a sensor for detecting frequencies within a selected frequency spectrum by a diverse signal associated with the detected frequencies;

a plurality of notched filters for notch filtering the spread spectrum signals so that a transmitted version of the spread spectrum signals is notch filtered at the detected frequencies; and

an antenna for transmitting the notch filtered spread spectrum signals.

44. The base station of claim 43 wherein the notch filtering is performed at intermediate frequency.

45. The base station of claim 43 wherein the notch filtering is performed at radio frequency.